PORTABLE ELECTRONIC APPARATUS

TECHNICAL FIELD

The present invention relates to a mobile communication machine such as a cellular telephone, a personal mobile phone and the like or a portable electronic apparatus such as a PDA (Personal Digital Assistants) and particularly to a folding type portable electronic apparatus configured to be capable of folding.

BACKGROUND ART

Recently, with regard to a cellular telephone, which is one portable electronic apparatus, various forms such as a folding type in which bodies constituting a display unit and an operation unit are formed separately and a display unit side body as a cover body is connected to an operation unit side body so as to be openable and closable and a sliding type in which the display unit side body is slidably connected to the operation unit side body are proposed in addition to an integral cellular telephone (so-called straight type) in which the display unit and the operation unit are constituted by a single body.

For example, with the folding type cellular telephone, a liquid crystal display screen disposed on the display unit side body can be enlarged by configuring the display unit side body separately from the operation side body and the telephone can be carried compactly by folding the both bodies while not in use.

In addition, in recent folding type cellular telephones, further to the trend towards multiple and higher functions such as a TV tuner mounted thereon, a cellular telephone with bodies not only openable and closable, but also rotatable or the like by using a biaxial hinge mechanism has been put into practical use.

In a folding type cellular telephone constituted as above, since the display unit side body is connected to the operation unit side body so as to be openable and closable, an extended angle in an extended state needs to be regulated.

For that purpose, in a folding type cellular telephone having a biaxial hinge mechanism, a cellular telephone has been disclosed with a projection portion for abutment disposed on each body so that extension larger than a certain angle can be regulated in the extended state (see Patent Document 1, for example).

Alternatively, in a cellular telephone provided with the biaxial hinge mechanism, for the purpose of reducing a thickness or a size of the cellular telephone, a biaxial hinge portion in which a first hinge component for opening and closing and a second hinge component for rotation are configured integrally as the biaxial hinge mechanism is used (see Patent Documents 2 to 5, for example).

[Patent Document 1] Japanese Unexamined Patent Application, First Publication No. 2005-299835

[Patent Document 2] Japanese Unexamined Patent Application, First Publication No. 2004-218688

[Patent Document 3] Japanese Unexamined Patent Application, First Publication No. 2005-311004

[Patent Document 4] Japanese Unexamined Patent Application, First Publication No. 2006-10025

[Patent Document 5] Japanese Unexamined Patent Application, First Publication No. 2003-174495

DISCLOSURE OF THE INVENTION

Problems to be Solved by the Invention

In a cellular telephone provided with a first body and a second body, positional misalignment between a tip portion of the first body and a tip portion of the second body needs to be suppressed in view of appearance specification.

However, the integrally configured biaxial hinge portion has many components relating to the positional misalignment, and positional misalignment can easily occur due to a fluctuation in the dimensions of each component or the like.

It is difficult to suppress the positional misalignment only by an improvement in dimensional accuracy of the components, and methods such as selection and delivery of components and an intentional provision of structural looseness so as to make positional misalignment inconspicuous and to correct the positions of tip portions of both bodies by an outer case or the like are employed.

However, these methods have defects such as disadvantages in component costs and responsiveness to a short delivery period and great looseness in the body, which degrades the product, and the like.

Such defects can be similarly caused in portable electronic apparatuses other than cellular telephones.

The present invention was made in view of the above problems and an object thereof is to provide a portable electronic apparatus including a first body and a second body and also including a biaxial hinge mechanism which connects the first body and the second body so as to be openable and closable about a first rotational axis and to be rotatable about a second rotational axis orthogonal to the first rotational axis, which can easily prevent positional misalignment between both bodies without relying only on the dimensional accuracy of components of the biaxial hinge mechanism.

Means for Solving the Problems

The present invention relates to A portable electronic apparatus including: a first body; a second body; and a hinge portion that connects the first body and the second body so as to be openable and closable around a first rotational axis and to be rotatable around a second rotational axis orthogonal to the first rotational axis, in which the hinge portion includes a first body fixing component fixed to the first body, a first connecting component connected to the first body fixing component so as to be rotatable around the second rotational axis, and a second connecting component connected to the second body so as to be rotatable around the first rotational axis and is configured by the first connecting component and the second connecting component connected to each other by screwing; and in a closed state in which the first body and the second body are folded with respect to the first rotational axis, a degree of fastening a screw connecting the first connecting component and the second connecting component can be changed.

In addition, it is preferred that a correcting means for correcting a positional relationship of the first connecting component and the second connecting component by changing a degree of fastening of the screw is formed on at least either one of an abutting portion of the second connecting component with the first connecting component and an abutting portion of the first connecting component and the second connecting component.

In addition, it is preferred that the first connecting component and the second connecting component are connected by way of fixing by threads in at least two symmetric positions about an axial direction of the second rotational axis.

In addition, it is preferred that: the first body fixing component and the first connecting component are preferably formed by sheet-metal working; and the second connecting component is formed by die casting or metal sintering.